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CONSULTANTS & TESTING CENTER

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NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No.: CECTC-BBMP-KRIDL-W.No.14-2015-16 13.04.2015

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

CLIENT	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager (West),** KRIDL, PIU, Bangalore.
NAME OF THE WORK	:	Improvements to roads & drains at Widia School East & North Road, C. Narayana Layout Cross Roads and Kuvempunagara Cross Roads in Ward No. 14, Bagalagunte, BBMP, Bangalore.
REFERENCE	:	EE/DD/WO/371/2014-15 Dated: 31.03.2015
SAMPLE ID	:	Bituminous Macadam
DATE OF TESTING	:	13.04.2015

The results of the tests conducted on the bitumen sample.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	83	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	47	Min. 40
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	284	Min. 220

Note:

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⇒ The results indicated above are based on the tests carried out on the samples received in the laboratory.

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Job No: CECTC-BBMP-KRIDL-W.No.14-2015-16 13.04.2015

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	Improvements to roads & drains at Widia School East & North Road, C. Narayana Layout Cross Roads and Kuvempunagara Cross Roads in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	EE/DD/WO/371/2014-15 Dated: 31.03.2015
Source / Location	Hotmix Plant, Bangalore
Type of Mix	Bituminous Macadam
Date of Testing	13.04.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	379	384	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	80	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	305	302	
4	Aggregate Impact value = percent fines	21.11	22.14	
	100* (W_2/W_1)%			21.62

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Macadam is 30%

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Job No: CECTC-BBMP-KRIDL-W.No.14-2015-16 14.04.2015

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	Improvements to roads & drains at Widia School East & North Road, C. Narayana Layout Cross Roads and Kuvempunagara Cross Roads in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	EE/DD/WO/371/2014-15 Dated: 31.03.2015
Source / Location	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	14.04.2015

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 2	
1	Weight of aggregate suspended in water with the basket	W_1 g	2011	2014	2018	
2	Weight of basket suspended in water	W_2 g	750	750	750	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1261	1264	1268	
4	Weight of saturated surface dry aggregate in air	W_3 g	2025	2022	2021	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	764	758	753	
6	Weight of oven dried aggregate	W_4 g	2014	2013	2011	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.636	2.656	2.671	2.653
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.675	2.688	2.707	2.691
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.55%	0.45%	0.50%	0.52%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Macadam is 2.0%

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Job No: CECTC-BBMP-KRIDL-W.No.14-2015-16 14.04.2015

Aggregate Gradation Test
IS : 2386 Part I

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the work	Improvements to roads & drains at Widia School East & North Road, C. Narayana Layout Cross Roads and Kuvempunagara Cross Roads in Ward No. 14, Bagalagunte, BBMP, Bangalore.
Reference	EE/DD/WO/371/2014-15 Dated: 31.03.2015
Sample ID	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	14.04.2015

Total Weight of Sample: **5375** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	389	7.24	7.24	92.76	90-100	
13.2	1665	30.98	38.21	61.79	56-88	
4.75	1642	30.55	68.76	31.24	16-36	
2.36	1036	19.27	88.04	11.96	4-19	
0.3	246	4.58	92.61	7.39	2-10	
0.075	123	2.29	94.90	5.10	0-8	

Total Weight of Sample: **5500** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	435	7.91	7.91	92.09	90-100	
13.2	1563	28.42	36.33	63.67	56-88	
4.75	1852	33.67	70.00	30.00	16-36	
2.36	981	17.84	87.84	12.16	4-19	
0.3	263	4.78	92.62	7.38	2-10	
0.075	92	1.67	94.29	5.71	0-8	

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Job No.: CECTC-BBMP-KRIDL-W.No.14-2015-16 16.04.2015

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

CLIENT	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager (West),** KRIDL, PIU, Bangalore.
NAME OF WORK	:	Improvements to roads & drains at Widia School East & North Road, C. Narayana Layout Cross Roads and Kuvempunagara Cross Roads in Ward No. 14, Bagalagunte, BBMP, Bangalore.
REFERENCE	:	EE/DD/WO/371/2014-15 Dated: 31.03.2015
SAMPLE ID	:	Bitumen (Bituminous Concrete)
DATE OF TESTING	:	16.04.2015

The results of the tests conducted on the Bitumen sample for Bituminous Concrete

Sl.No	Description	Test Method as per IS	Test Result	Requirement as per IS: 73-2013
1	Penetration at 25^{0}C, 100g, 5 Sec 1/10 mm	IS: 1203-1978 (RA-2009)	88	80 to 100
2	Softening point, ^{0}C	IS: 1205-1978 (RA-2009)	50	Min. 40
3	Ductility at 27^{0}C, cm	IS: 1208-1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS: 1209-1978 (RA-2009)	272	Min. 220

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